REMARKS

Claims 1-39 are in the case and presented for consideration.

Claims 1, 19, 29, 30, 31 and 32 have been improved to clarify some different aspects of the claimed invention. Support for the changes to claims 1, 19, 29, 30, 31 and 32 can be found, for example, in page 5, paragraph [015], and page 15, paragraph [045] (7-8th line), of the specification.

Claim 18 has been reverted back to its original form. Accordingly, no new matter has been added.

<u>Rejection Under 35 U.S.C. § 102</u>

Claims 30 and 31 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,621,454 to Ellis, et al. (hereinafter referred to as "Ellis"). The reasons for the rejection are stated on pages 4-5 of the Office Action. The rejection is respectfully traversed.

Both claim 30 and 31 recite at least the step of "performing the algorithm at least once to <u>detect only a representative sample</u> of the predetermined content in the media information stream, while employing a respective set of parameters in the algorithm for each performance thereof".

Applicants' specification discloses, in an exemplary embodiment, using a sample of video clips having a variety of commercials. See specification, page 15, paragraph [045].

In page 4, section 2, of the October 5, 2006 Office Action, the Office asserts that the claimed performing step is disclosed by Ellis in col. 34, lines 35-53. Col. 34, lines 35-53 of Ellis are reproduced below for convenient reference.

> FIG. 12 illustrates the above-described steps performed by the new segment detection module. As shown therein, processing begins at step S100 wherein a desired portion of the received broadcast is examined to *locate all intervals between cues*. Afterwards, as shown in step S110, *each of the intervals located in step S100 is examined* so as to determine if the respective start and end cues are plausible. Thereafter, as shown in step S120, the *acceptability of each interval which has plausible cues on its respective ends is determined* based upon the respective nominal length of the interval, the deviation from this nominal length and the combination of the start and end cues. If the interval is determined to be acceptable, then as indicated in step S130, the audio/video capture level is determined by the selective capture level module. Thereafter, *the newly accepted segment of interest is supplied to the database 412* of the control computer 30 as shown in step S140. If, on the other hand, in step S120, the respective interval or segment is rejected, then further processing for this segment is not perform.

According to Ellis, the new segment detection module is configured to find all the new segments of interest within the examined portion of the received broadcast so that a broadcast of the same segments will be recognized by the system. A key signature is also produced for each of the new segments of interest identified by the new segment detection module, and stored. The system recognizes a broadcast of a segment identified by the new segment detection module by detecting a match between the stored key signatures and the signatures of the broadcast segment. See Ellis, col. 4, lines 7-18, and col. 34, lines 35-53.

In sharp contrast, claims 30 and 31 require detecting only a representative sample of the predetermined content, such as commercial segments, to, e.g., vary or optimize the parameters of the media content detection algorithm. Because the new segment detection module is configured to find **all** the new segments of interest, it does not detect **only** a representative sample of the predetermined content, as recited in the

claims. The algorithm and optimized parameters are then employed to detect the predetermined content, such as the commercial segments, in the media information stream. The claimed invention does not require each one of the predetermined contents to be identified; rather, only a representative sample is detected, as recited in claims 30 and 31. Nor is a separate set of parameters needed for each of the identified predetermined content.

However, according to Ellis, any segment that is not identified by the new segment detection module and does not have its key signature stored in the database (col. 7, lines 65-67) will not be recognized by the system; accordingly, all of the segments are required in order for the Ellis invention to function correctly. Therefore, the new segment detection module or process does not have the option of identifying only a representative sample of the predetermined content, as recited in claims 30 and 31. The new segment detection module or process **must** identify all of the segments for correct functionality. The new segment detection module or process does not detect only a representative sample.

Thus, Ellis cannot teach or suggest the claimed program, including the combinations of features, recited in claims 30 and 31. Accordingly, claims 30 and 31 are patentable over Ellis and withdrawal of the rejection of claims 30 and 31 is respectfully requested.

First Rejection Under 35 U.S.C. § 103

Claims 1-3, 5 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ellis and U.S. Patent 6,366,296 to Boreczky, et al. ("Boreczky"). The

reasons for the rejection are stated on pages 6-9 of the Office Action. The rejection is respectfully traversed.

Initially, in order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation in the cited reference(s), or in the knowledge generally available to one of ordinary skill in the art, to make the asserted modification to achieve the claimed subject matter. See MPEP § 2143. As stated in MPEP § 2142, third paragraph:

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (Emphasis added).

Applicants respectfully submit that the Office has failed to establish a *prima facie* case of obviousness. Claim 1 recites, among other patentable features, the step of "performing the algorithm at least once <u>to detect only a representative sample of</u> the predetermined content in the media information stream, while employing a respective set of parameters in the algorithm for each performance thereof", and the step of "repeating the performing and evolving step until the at least one respective set of parameters employed in the algorithm is optimized".

As explained above, Ellis finds <u>all</u> the intervals that are new segments of interest in the received broadcast examined by the new segment detection module. Ellis also requires the key signatures of <u>all</u> the new segments of interest to permit the system to

recognize or match the broadcast of those segments. See Ellis, col. 4, lines 1-48, and col. 42, lines 12-18.

Boreczky teaches generating metadata for all the selected features in a media file in order use the metadata as cues for locating portions of interest in the media file. See Boreczky, col. 3, lines 35-39 and 61-67, and col. 4, lines 1-9. The media browser of Boreczky cannot locate selected features in portions of the media file that does not have any metadata. Thus, similar to Ellis, col. 3, line 61, to col. 4, line 9, of Boreczky specifically teaches reviewing the <u>entire portion of the media file</u> to identify <u>all</u> the segments of the media file that contain the desired feature(s) (e.g., a speaker), and generating metadata <u>at each time-wise position</u> in the media file that the desired feature(s) appears.

Therefore, Boreczky fails to cure the deficiencies of Ellis with respect to performing the media content detection algorithm <u>to detect only a representative sample of</u> the predetermined content in the media information stream, as recited in claim 1. Accordingly, the proposed combination of Ellis and Boreczky would not result in the method of claim 1.

Claim 1 further recites additional combinations of features that further patentably distinguish the claimed media content detection method from Ellis.

The Office also acknowledges that Ellis fails to teach repeating the performing and evolving step until the at least one respective set of parameters employed in the algorithm is optimized. However, the Office asserts that Boreczky discloses the use of a media browser which utilizes metadata to optimize the use of parameters in an

algorithm via the use of learning Bayesian networks, and that it would have been obvious to modify Ellis to utilize the metadata and learning Bayesian network taught by Boreczky. Applicants respectfully disagree with these assertions.

As explained above, Boreczky teaches identifying <u>each time-wise occurrence</u> of the selected feature(s) in the media file and generating metadata for each identified feature in order to use the metadata as cues for locating portions of interest in the media file. See Boreczky, col. 3, lines 35-39 and 61-67, and col. 4, lines 1-9. Boreczky defines metadata as "information that represents the likelihood of the existence of a feature in a media data stream." See Boreczky, col. 3, lines 35-36. However, Boreczky teaches that metadata do not always reliably indicate a feature in the media file, but <u>provides no teaching for deriving reliable metadata</u>.

> Because automatic techniques for generating metadata for media features do not always work reliably, the metadata itself is not always easy to interpret, and the <u>metadata rarely positively indicate the absolute presence or absence of a feature in a media file</u>.

See Boreczky, col. 5, lines 55-67, and col. 6, line 1.

Instead, Boreczky performs at <u>least one additional step</u> of assigning a confidence score to each metadata to convey "the probability of a feature's existence in a more understandable form." Boreczky, col. 6, lines 1-5. However, according to Boreczky, generating confidence scores for metadata values requires <u>a further step of determining</u> the reliability of the metadata. See Boreczky, col. 6, lines 5-8 and 37-41 (stating that "the metadata values are preferably mapped to corresponding confidence score values

using a function that is determined based on the feature corresponding to the metadata and the reliability of the metadata.").

Boreczky further teaches using an arbitrarily defined threshold to assign the values of the confidence scores. See Fig. 2, and col. 7, lines 14-24.

> In the example shown in FIG. 2, metadata representing shot boundary values are mapped to a confidence score using a threshold. If a metadata value is above the threshold, the corresponding confidence score is assigned a value of one, indicating a relatively high probability... If the metadata is below the threshold, the corresponding confidence score is assigned a value of zero.

See Boreczky, col. 6, lines 18-25.

> Using the example in FIG. 2, adjusting the sliders on the confidence score value manipulation control 11 can adjust the threshold value or values used to map the metadata to confidence scores. By adjusting the threshold value(s), the user can adjust the sensitivity of the mapping function to the metadata...

See Boreczky, col. 7, lines 18-23.

As a result, a further step of adjusting the threshold based on the reliability of the metadata is also performed. See Boreczky, col. 6, lines 25-26 (stating that "the threshold is adjusted automatically or by a user based on the reliability of the metadata."). None of above-mentioned steps are needed or recited in the claimed method.

Furthermore, even though "mapping metadata values to confidence score values can be performed according to functions that are 'learned'", and the threshold adjusted, accordingly, Boreczky still provides no details regarding adjusting the threshold based the reliability of only a representative sample of metadata corresponding to the desired

feature(s). In Boreczky, since the entire media file is reviewed to find <u>every time-wise</u> occurrence of the selected feature(s), and metadata is produced for <u>each time-wise</u> occurrence of the selected feature(s), it follows, therefore, that the threshold is also adjusted on a feature-by-feature basis.

For the foregoing reasons, Ellis and Boreczky fail to support the alleged case of prima facie obviousness advanced in the Office Action. Accordingly, claim 1 is patentable over Ellis and Boreczky. Claims 2-3, 5 and 16 depend from claim 1 and, accordingly, are also patentable over Ellis and Boreczky for at least the same reasons as those discussed above regarding claim 1. Therefore, withdrawal of the rejection of claims 1, 2-3, 5 and 16 is respectfully requested

<u>Second Rejection Under 35 U.S.C. § 103</u>

Claims 4, 6-15 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ellis and Boreczky, and further in view of U.S. Patent 6,957,200 to Buczak, et al. ("Buczak"). The reasons for the rejection are stated on pages 9-16 of the Office Action. The rejection is respectfully traversed.

Claims 4, 6-15 and 17 depend from claim 1, and accordingly, are patentable over Ellis, Boreczky and Buczak for at least the same reasons as those discussed above regarding claim 1. Claims 4, 6-15 and 17 also recite additional combinations of features that further patentably distinguish the claimed media detection method over Ellis' content signature comparison technique, Boreczky's metadata-to-confidence score mapping technique, and Buczak's sensor optimization technique.

The Office Action acknowledges that Ellis fails to disclose wherein the step of automatically evolving includes performing a genetic algorithm to evolve at least one respective set of parameters. However, the Office Action asserts that Buczak discloses automatically evolving includes performing a genetic algorithm to evolve at the at least one respective set of parameters, and that it would have been obvious to modify Ellis with the teachings of Buczak "in order to facilitate automatically evolving includes performing a genetic algorithm to evolve the at least one respective set of parameters..." The Office also asserts that Buczak is analogous art.

Buczak discloses selecting sensors from a sensor network for tracking at least one target in real-time (abstract). A modified genetic algorithm is used to determine which subset of sensor arrays is responding to the target being tracked. Buczak, col. 2, lines 20-44.

However, Buczak provides no details regarding parameters employed in a media content detection algorithm or optimizing such parameters or employing such parameters to detect predetermined content in the media information stream.

In fact, Buczak is not from the same field of endeavor as the claimed invention and is not reasonably pertinent to the problems that are solved by the claimed invention. The Office is reminded that "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Buczak relates to the art of choosing sensors of a network of sensors to be

utilized in tracking a particular target (see Buczak, col. 1, lines 10-16, and col. 2, lines 41-44) whereas Applicants' field of endeavor is the art of media content detection. Clearly, Buczak is not within the field of Applicants' endeavor.

Buczak is also not reasonably pertinent to the particular problem with which Applicants were involved. In Buczak, the goal of optimization is to select a subset of sensors within the UGS (unattended ground sensors) network that can accomplish the tracking process with <u>minimal errors while minimizing the cost metrics</u>. See Buczak, col. 10, lines 10-12. A common metric that is often considered is total energy used by the sensors at each moment in time. Considering the <u>multiple objectives</u> (i.e., target detection, tracking, and the minimization of sensor power usage), the network has to optimize the use of its sensors for each of these objective functions in order to achieve optimal performance. In order to select the set of sensors that provide the optimal performance, appropriate measures-of-merit or cost metrics are needed for each of the network's objections. See Buczak, col. 10, lines 11-31. Unlike Buczak, the parameters are evolved to improve the accuracy of the media content detection algorithm by detecting <u>only a representative sample</u> of the predetermined content. Claimed method does not require further selection of a subset of the parameters to minimize certain predefined cost metrics, such as power usage.

In sum, the differences between the optimizing sensors (i.e., unattended ground sensors) to accomplish the tracking process with minimal errors while minimizing certain predefined cost metrics make the Buczak patent non-analogous to, and irrelevant to, the problems of optimizing parameters for detecting broadcast of media content.

Thus, Buczak provides no motivation to modify the teachings of Ellis to result in the combinations of features recited in claims 4, 6-15 and 17. Therefore, withdrawal of the rejection of claims 4, 6-15 and 17 is respectfully requested.

Third Rejection Under 35 U.S.C. § 103

Claims 18 and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ellis and Buczak. The reasons for the rejection are stated on pages 17-19 of the Office Action. The rejection is respectfully traversed.

Claim 18 recites the step of "performing one or more algorithms, each to detect the presence of predetermined content in the media information stream, wherein each algorithm is a function of a corresponding chromosome" and the step of "automatically determining a value, for the chromosome of at least one of the algorithms, which enables that algorithm to detect the presence of the predetermined content in the media information stream with an increased degree of accuracy relative to the accuracy achieved when other values are employed".

The Office acknowledges that Ellis fails to disclose "wherein each algorithm is a function of a corresponding chromosome..." However, the Office asserts that the missing teaching is disclosed by Buczak, and that it would have been obvious to "modify Ellis with the teachings of Buczak to facilitate each algorithm as a function of a corresponding chromosome for the benefit of narrowing the parameters of a chromosome to determine a solution to the problem." The Office also asserts that Buczak is analogous art.

As explained above, however, Buczak provides no details regarding parameters employed in a media content detection algorithm or optimizing such parameters or employing such parameters to detect predetermined content in the media information stream. In addition, the differences between the optimizing unattended ground sensors to accomplish the tracking process with minimal errors while minimizing certain predefined cost metrics make the Buczak patent non-analogous to, and irrelevant to, the problems of optimizing parameters for detecting broadcast of media content. Accordingly, Buczak fails to provide any motivation to modify Ellis to include the combination of features recited in claim 18. Therefore, withdrawal of the rejection of claim 18 is respectfully requested.

Claim 29 recites a "means for performing the algorithm at least once to detect <u>only a representative sample</u> of the predetermined content in the media information stream, while employing a respective set of parameters in the algorithm for each performance thereof".

The Office acknowledges that Ellis fails to disclose "means for automatically evolving at least one respective set of parameters..." However, the Office asserts that the missing teaching is disclosed by Buczak, and that it would have been obvious to "modify Ellis with the teachings of Buczak in order to facilitate a means for automatically evolving at least one respective set of parameters employed in the algorithm..." The Office also asserted that Buczak is analogous art.

As explained above, however, Buczak provides no details regarding parameters employed in a media content detection algorithm or optimizing such parameters or

employing such parameters to detect predetermined content in the media information stream. In addition, the differences between the optimizing unattended ground sensors to accomplish the tracking process with minimal errors while minimizing certain predefined cost metrics make the Buczak patent non-analogous to, and irrelevant to, the problems of optimizing parameters for detecting broadcast of media content. Also, Ellis provides no details regarding optimizing parameters using only a representative sample of the predetermined content. Accordingly, the combination of Ellis and Buczak fails to support the rejection of claim 29. Therefore, rejection of claim 29 is respectfully requested.

<u>Fourth Rejection Under 35 U.S.C. § 103</u>

Claims 19-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,577,346 to Perlman and Buczak. The reasons for the rejection are stated on pages 19-24 of the Office Action. The rejection is respectfully traversed.

Claim 19 recites a controller for "performing the algorithm at least once to detect <u>only a representative sample</u> of the predetermined content in the media information stream stored by said memory, while employing a respective set of parameters in the algorithm for each performance thereof". Applicants submit that Perlman and Buczak fail to suggest the apparatus, as recited in claim 19.

The Office Action asserts that Perlman teaches the apparatus of claim 19, except "Perlman fails to disclose automatically evolving at least one respective set of parameters employed in the algorithm to maximize the degree of accuracy at which the

algorithm detects the predetermined content in the media information stream." The Office then concludes that it would be obvious to "modify Perlman with the teachings of Buczak in order to automatically evolve at least one respective set of parameters..."

According to Perlman, the video segment received by the management system 102 is monitored for patterns. See Perlman, col. 5, lines 56-60, col. 6, lines 16-18. If a pattern is recognized in the video segment, the recognized pattern is looked up in a table to find a match.

As explained above, Buczak teaches optimizing unattended ground sensors to accomplish the tracking process with minimal errors while minimizing certain predefined cost metrics. Buczak, however, provides no details regarding parameters employed in a media content detection algorithm or optimizing such parameters or employing such parameters to detect predetermined content in the media information stream. In addition, the differences between the optimizing unattended ground sensors to accomplish the tracking process with minimal errors while minimizing certain predefined cost metrics make the Buczak patent non-analogous to, and irrelevant to, the problems of optimizing parameters for detecting broadcast of media content. Therefore, the combination of references provides no motivation to modify Perlman to achieve the apparatus, as recited in claim 19.

Even if, *arguendo*, motivation to modify Perlman exists, the references still fail to suggest how the stored patterns are capable of being optimized. As such, Perlman and Buczak also cannot teach a controller for detecting a representative sample of the

predetermined content to optimize or evolve the parameters used in the media content detection algorithm. Accordingly, claim 19 is patentable over the cited references.

Claims 20-28 depend from claim 19 and, accordingly, are also patentable over Perlman and Buczak for at least the same reasons as those discussed above with respect to claim 19. Therefore, withdrawal of the rejection of claims 19-28 is respectfully requested.

Fifth Rejection Under 35 U.S.C. § 103

Claims 32 and 37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Perlman and Ellis. The reasons for the rejection are stated on pages 25-28 of the Office Action. The rejection is respectfully traversed.

Claim 32 recites a controller for "performing a method comprising (a) performing an algorithm at least once to detect only representative sample of a predetermined content in a provided media information stream, while employing a respective set of parameters in the algorithm for each performance thereof".

As explained above, Ellis finds all the intervals that are new segments of interest in the received broadcast examined by the new segment detection module. Ellis also requires the key signatures of all the new segments of interest to permit the system to recognize or match the broadcast of those segments. See Ellis, col. 4, lines 1-48, and col. 42, lines 12-18. Thus, Ellis provides no details regarding detecting only a representative sample of the predetermined content to optimize the parameters employed in the media content detection algorithm.

Perlman discloses monitoring video segment for recognizable patterns, and comparing recognized patterns with stored patterns to find a match. Therefore, Perlman fails to cure the deficiencies of Ellis with respect to performing the media content detection algorithm <u>to detect only a representative sample</u> of the predetermined content in the media information stream to optimize the parameters utilized in the performance of the algorithm, as recited in claim 32. Accordingly, the proposed combination of Ellis and Boreczky would not result in the system of claim 32.

Claim 33-39 depend from claim 32 and, accordingly, are also patentable over Perlman and Ellis for at least the same reasons as those discussed above with respect to claim 32. Therefore, withdrawal of the rejection of claims 32-39 is respectfully requested.

Accordingly, the application and claims are believed to be in condition for allowance, and favorable action is respectfully requested.

If any issues remain, the Examiner is respectfully invited to contact the undersigned to advance the application to allowance.

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